STRATEGY RESEARCH PROJECT

A CURRICULUM FOR STRATEGY IN THE INFORMATION AGE: CHAOS IN A NEW ERA

BY

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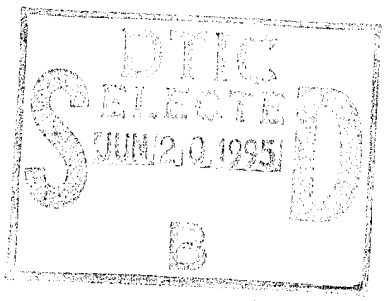
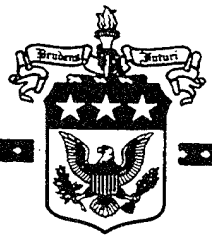


USAWC CLASS OF 1995



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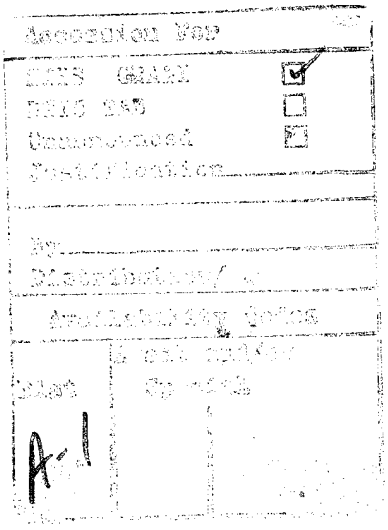

A CURRICULUM FOR STRATEGY IN THE INFORMATION AGE: Chaos in a new era

In this awkward transition between the industrial age and the information age which we presently find ourselves, military leaders have focused on digitization as the revelation of the information age. This focus has engendered a fascination that has become contagious. As the collective attention of our leaders is drawn deeper and deeper into this vision, I am concerned about the loss of focus on strategy.

Force XXI, Louisiana Maneuvers and Battle Labs are all being used to field information age technology at the operational and tactical levels. This is a huge endeavor and it requires much attention. But, what is the strategic counterpart of these developments? At the US Army War College (USAWC) in Carlisle, Pennsylvania, the Strategic Crisis Exercise is likely to be the answer and that concerns me because it is merely an extension of twentieth century thinking at levels one and two[1] aided by computers.

As the developed countries of the world progress into the information age, fundamental cultural changes are bound to occur. During the industrial age the cultures have been based on materialism. During the information age I am convinced that this basis will change, perhaps to intellectualism. With a

cultural shift of this magnitude as a potential future, leaders must be prepared to assist with the enormous challenges that we will encounter.

In 1981, R. Buckminster Fuller was one of the first to recognize the role computers would play in the coming revolution of consciousness when he said, "The value of computers is in reversing historically assumed-to-be-unalterable positions of opposing views."[2] A curriculum on strategy in the information age must allow ample opportunity to experience this reversal.

A vital ingredient to a leader's education is strategy. The current curriculum at the USAWC provides an excellent grounding in strategy for a protege of industrial age materialism. However, the present curriculum rarely challenges the student to do level three thinking. To his credit, Major General Chilcoat, the Commandant, has identified this weakness and has implemented a program to fix this shortcoming. As commendable as this effort is, bigger questions face the strategic community. Will the twenty first century simply be a repeat of the twentieth sped up by computers? What is needed to prepare students of strategy for the twenty first century? With the proposed changes that are being entertained today, will the new curriculum be sufficiently robust to prepare the students for active participation in the global strategic decision making process?

Developing strategic visions and strategy require excursions outside most people's intellectual comfort zone and into level three thinking. The current curriculum does not provide sufficient opportunity for a student to encounter this discomfort. Providing such opportunities in a controlled, non-threatening environment should be the primary focus of the USAWC.

This paper has been prepared to energize level three thinking about the changes the twenty first century will bring us and to offer an outline of a curriculum for preparing students of strategy for the inevitable unpredictability in a new era.

INTRODUCTION

Educing strategy is thinking, an intellectual exercise, where we sometimes "reverse historically assumed-to-be-unalterable positions." Strategy is derived out of behavior and values which are derived out of experience. Experience is derived out of encounters with our environment. Perception is the genesis of the process. Considering these fundamental concepts of the process of acquiring knowledge led me to the conclusion that our current curriculum for teaching strategy does not adequately address the basic issue, learning to think differently.

It seems Charles W. Taylor, a strategic futurist formerly on the faculty of the Strategic Studies Institute, Carlisle, PA, also saw the limitations in today's approach. In 1990, he published a twenty page monograph, "Creating Strategic Visions", presumably for the purpose of outlining an academic course for military and corporate leaders to learn how to develop strategic visions. Mr. Taylor defined strategic vision as "intuitive, holistic views of plausible realities or futures."[3] Digesting this definition challenges many of us; assimilating it is well beyond the conceptual competence of many of the students at the USAWC.[4]

Considering how long Mr. Taylor's ideas have been in print and the difficulties we still encounter trying to develop and articulate strategic vision, I was led further to believe that our continued frontal assault (Clausewitzean) on strategy is lacking the finesse (Sun Tzu) needed to pry open the minds of strongly opinionated, highly successful military officers so that they might become qualified strategists in the information age.

The underlying principle in any course on strategy is to learn to think differently. As FM 22-103 says, the purpose for the search for strategy "is to emphasize that the search itself is important and worth our best efforts and attention at a time when familiar landmarks have vanished...".[5] The current curriculum for teaching strategy at the USAWC is based upon initially

immersing the students in military history and national politics to familiarize them with historical landmarks. Subsequent to this deluge of information, time for reflection and pursuit of special interests are provided with an elective program. During this phase of instruction some students encounter glimpses into unfamiliar territory, while others take courses which continue to reinforce their perceptions of the world.

In other words, the curriculum is not guiding the student from the familiar level one thinking through level two and into level three. Whether the student learns to think differently is left solely up to the student. My observation of and participation in this process have led me to believe that left to make the choice, most students elect courses with which they are familiar and tend not to wander outside their comfort zone.

Volumes of information have been published about how to create visions and how to develop strategies. Most of this literature is found in the political science discipline. While political scientists have been attempting to define "ways" to develop the "means" to arrive at some "end", philosophers, mathematicians, physicists and biologists, just to name a few, have been discovering a whole new perception of reality. Having a familiarity with these discoveries is required for the new student of strategy if we ever expect to

describe the "ends". The first section of this essay following the introduction discusses this changing perception of reality.

Understanding the difference between data, information and communication assists the strategist with clarifying his perceptions. As the information age crashes headlong into our lives, the apparent lack of this understanding is causing more and more confusion and anxiety. The discussion in section two, Data, Information, Communication, focuses on the differences and the meaning of these phenomena in our lives.

Another difficulty we encounter when thinking is that we are ideologically materialists. We have grave difficulty in understanding an intellectually motivated person. We have even greater difficulty understanding the motivations of a spiritually oriented person. Section three, Materialism, is devoted to our materialist philosophy, how it influences our thought processes, and some suggestions as to how we might learn to change.

The way we solve problems contributes to our ineptness in dealing with international strategy. Generally, our solution to problems is to take action. No matter where in the world, no matter what the cost, upholding our ideals, policing the globe, has been paramount to leading the world to a more civilized condition. This technique has become very risky in our new non-linear surroundings. I plan to spend some time discussing how we think about

problems and how we might learn to change in section four, Problem Solving Techniques.

In a nation where the free expression of ideas is cherished, gaining a consensus on a common direction is and will remain difficult. On the other hand, in these times of uncertainty, bureaucracies are beneficial. They are unable to react quickly so they have the ability to slow the onslaught of the future, creating the perception of stability. Unfortunately, the demands of the people in these uncertain times are for greater flexibility. Section five will be used to expand on these important, often neglected, Paradoxes of Democracy, and how they affect our thinking.

Clausewitz and Sun Tzu provided us with philosophies upon which to build strategies for war. Clausewitz gave us the materialist's perception of war which was ideal for the industrial age. Sun Tzu gave us the intellectualist's perception, which may prove more useful in the information age. We flounder in peacetime because we have only spiritualistic or pacifist philosophies upon which to build strategies for peace. Because we live in a world where historically weakness has been exploited by a stronger state, we continue to create strategies based upon the war philosophies. If the information age sees us change from materialism to intellectualism, will we not need a new paradigm of peace? The problem is that we have not spent enough time

thinking and reflecting on peace to have formed a philosophy that fits either the current or the emerging culture. We expect the strategist to deal with this incongruity. Section six, Philosophy of Peace, contains discussion about this problem and some techniques that might be used to help fill this void in our thinking.

Finally, we look to the wrong people for vision and strategy. We expect elected officials to stand and deliver. Granted, there have been a few remarkable leaders in our history who have been visionaries. But times have changed. Our world is complex and becoming more so everyday. Remember Mr. Taylor's definition of strategic vision--"intuitive, holistic views of plausible realities or futures"? Few individuals are capable of such far reaching thought in today's global society, particularly during peacetime in an emerging information age. Multi-disciplined teams are needed. More details on the need for a team approach are contained in section seven, Team Approach.

Thinking about strategy is difficult because it is complex, it is dynamic, it is intuitive, it is holistic and it deals with a constantly changing reality. In the last section of this paper, I propose a curriculum for strategists in the information age.

I think part of the answer to Dr. Jablonsky's question, "Why is Strategy Difficult?" is because thinking about it is difficult. Another part is that strategy

necessarily deals with the future. Since nobody has learned to accurately and repeatedly predict the future, I decided to tackle the difficulty of learning to think differently and to leave prognostication to the mystics.

A NEW REALITY

Today, strategists are faced with much greater difficulties than their predecessors. The industrialized nations have reached the limits of the current paradigms of reality. Could it be that materialism, an outgrowth of the industrial age, is giving way to intellectualism, an outgrowth of the information age? An expansion of our perception of reality is required if we are to continue developing new techniques for coping with the onrushing future. Since the future insists upon arriving, we cannot stop developing strategy while we expand our understanding of reality. This is an unprecedented undertaking.

The future brings with it new data. As we react to these data, our reality unfolds. This process, evolution of consciousness, seems to occur at a rate directly proportional to the rate of conversion of data to meaningful information.[6] Recent technological developments coupled with emerging concepts from the new sciences form a unique basis for stretching the envelope of strategy, not only for us, but for all future generations.

The quest of human consciousness is focused on *meaning*. Trying to make some meaning out of our perception of reality is at the core of every human being.[7] Coping with the information that is encountered during this quest is based on the skills we have learned from past experiences.

My research into the new sciences and observations of world events over the past twenty years have led me to the conclusion that we are in the midst of an emerging second Renaissance. As the first Renaissance unfurled, developing societies changed from agrarian cultures to industrial cultures. As this second Renaissance unfurls, developing societies are changing from industrial cultures to information cultures. As best I can tell, Max Planck probably started the revolution in 1900 when he presented his theory on Quantum physics. Einstein followed shortly thereafter with his Theory of Relativity. These two gentlemen opened the floodgates to a new perception of reality, much the way Galileo and Newton did 300 years ago.

Unknown to the general populous, scientists have been redefining reality for nearly 100 years. Only during the last decade have their results begun to appear in widely distributed publications. This changing perception is uncomfortable to many of us. It takes away the certainty of control that Galileo and Newton provided us and replaces it with the uncertainty of order.

Lying here on my desk are several books, all published since 1987. The

titles are representative of what is occurring: Fractals, Synchronicity, The Chaos Frontier, From Clocks to Chaos, Complexity, The Matter Myth, The End of Physics, Leadership and the New Science, Reality Rules: I, Chaos: Making a New Science, and The Ending of Time. The bibliography provides more information about these books, but what is important is that they were written by learned people. These books are not science fiction. They are indicative of an explosion of ideas which describe a new reality, not unlike what must have happened during the first Renaissance.

Newton's reality, one of the products of the Renaissance, provided the long sought after certainty of the universe. Our new reality, not yet credited to any particular person although Max Planck is a likely candidate, seems to be reversing Newton's concepts and we are progressing into uncertainty again. "Chaos and turbulence are the essence of reality and there is often no cause when events change directions. The focus has shifted from the machine view of order...to the creative nature of disorder, irregularity and chance."[8] This uncertainty has, of course, resided along side certainty all the while, we just ignored it.

Physicists identified these uncertainties as anomalies and discarded them during research. Mathematicians also tended to ignore them because they fell outside the predictable results. In our personal lives we perceived our

encounters with this uncertainty as brief episodes outside our conventional routines. Quantum physics and Chaos simply acknowledge the existence of uncertainty. Studying these sciences is the study of the phenomena of uncertainty. Since strategy is a similar study, could not the rules of one apply to the other? At the essence of these sciences we learn that there is no stability, no equilibrium, only constant change. The rate of change is responsible for our perception of stability/instability, i.e., the slower the change in any observed system, the more stable the system appears.

The 1960's were a period of momentous global activity. The digital computer, upstaged by all the political and military turbulence, quietly made its debut during this period. Unknown to the general public, research in the process of digital information transmission was well underway, an essential ingredient for the information age.

Less known was a curious meteorologist, Edward Lorenz, wondering why forecasting the weather eluded the certainty promised by Newtonian determinism and LaPlace's mathematics. Lorenz was also unaware that he was dawdling at the edge of classical science as he discovered an orderly disorder in the patterns his primitive computer produced while experimenting with his meteorological algorithms. Besides fascinating his colleagues with his "toy weather" he stumbled onto one of the defining characteristics of Chaos. He

discovered what has become known as the Butterfly Effect. The technical name for this effect is *sensitive dependence on initial conditions*.[9] Thus began the fascinating unfoldment of the science of Chaos.

Since Lorenz's discovery, numerous scientific researchers and mathematicians have begun describing new ways to perceive reality. New techniques for scientific analysis are being devised. A plethora of new terms and concepts have been defined, for example: Fractal, geometric patterns, a motif, which keeps repeating itself in ever-diminishing scales[10]; strange attractors; self-organizing criticality[11]; divergence and convergence of systems; deterministic chaos; instability of itineraries[12]; and bifurcation, or period doubling.

According to this "new physics" everything in the universe has an inherent probability-vibrational pattern and everything in the universe is connected by these vibrations. The new reality no longer ignores the subtle patterns and, in fact, has begun theorizing that the gross patterns we deal with everyday exist because of the subtle patterns. And, none of what we have known as matter exists until it is observed by consciousness.[13] This type of thinking, which seems "far out", was rudimentary in the development of the "chip".[14]

The purpose of thinking is to acquire knowledge. Human consciousness acquires this knowledge through encounters with data, information and communication. Until we understand the full value of these encounters and have a familiarity with the new science concepts, we will remain hopelessly lost on the periphery of the information age.

Encountering the new sciences in an academic, level one, non-threatening environment would legitimize the material, guide the students into the process of thinking about thinking, and provide intellectual insights to aid in future assignments. The curriculum at USAWC on strategy should include information about the new sciences and the changing perception of reality.

DATA, INFORMATION, COMMUNICATION

"The developed world may well be at a watershed between the eclipse of the industrial age and the start of the information age."[15] I could not agree more. Today, the words data, information, and communication are used interchangeably. This type of imprecision will degrade the quality of thinking in the information age and will therefore be discouraged. Precision will be particularly important to the strategist.

Our world is a system of vibrations, all interconnected.[16] This system is stuffed full of data in the form of wave patterns subject to reception by humans. Humans receive these data through their five objective senses. They also receive them through the subtle senses, extra sensory perception, but there is insufficient time to delve into that subject here. As the data are received, the nervous system, including the brain, translates these signals into information. Data are the source of energy for activating consciousness. To paraphrase Margaret Wheatley, the greater the ability to convert data into communicable information, the higher the level of consciousness.[17]

Information is the product of mental activity (thinking). Communication is the physical manifestation of brain activity. "Information is flowing from many senses, and it is subject to continual editorial revision, which produces multiple drafts of narrative fragments all over the brain. Language is then used to finalize the drafts during communication."[18]

This interpretation process (thinking) occurs nearly simultaneous with the stimulation, so we spend very little time pondering how the message was received or translated. We spend very little time thinking about how we think. The preponderance of time is spent reacting to these data. Because we spend so much time engaged in activity, our thoughts become reality. We think the data are real. But, as I just explained, our reality seems to be an interpretation

of the signals we are receiving and these signals are generated as the result of interference patterns among the billions times billions of waves in the universe.

During consciousness we are immersed in data waves. We screen out the ones that are useful to us and translate them into information. We also tend to avoid those that seem trivial.[19] As we gain more information we become knowledgeable. As we become knowledgeable we acquire the desire to communicate with others. Communication is the "provision of stimuli eliciting social responses from other members of the group." It is the essence of the socialization process.[20]

How we form information from the constant stream of data is highly complex and dependent upon many variables. Our values influence how we interpret our observations of the world. Our preferences, our biases, prejudices, spiritual background, and personal experiences weigh heavily on how we interpret the data into information. As materialists, we seek data to reinforce our materialistic ideology. Using our mental capacity to think this way is essential to maintaining cultural values and social accord.

Developing strategy, however, requires a different set of data interpreted through the intellectual process, so we must reset our receivers from the materialistic channels to the intellectual ones to be able to receive intellectual data. (Change channel from level one to level two and three.) Intellectual

data received on materialistic channels is noise and vice versa. Once the receivers are reset, then the programs for processing must be loaded into the active area of thinking.

Strategists must be able to gather pertinent data, interpret them into useful information and communicate their thoughts precisely. Understanding the difference between data, information and communication is essential to this process. Refer to figure 1. Today's curriculum for teaching strategy at USAWC does not provide sufficient or timely learning opportunities in this rapidly emerging arena.

MATERIALISM

Materialism is defined as "the theory that physical matter is the only reality and that everything, including thought, feeling, mind and will can be explained in terms of matter and physical phenomena."[21] Facing the fact that we are materialists is distasteful to many, but understanding this ideology and the impact of it is critical to learning to think differently.

William E. Connolly states the impact clearly, "An ideology assimilates information in ways that preserve its basic integrity; it consists of a system of mutually reinforcing beliefs which appear plausible when viewed from

Hierarchy of Thought Process

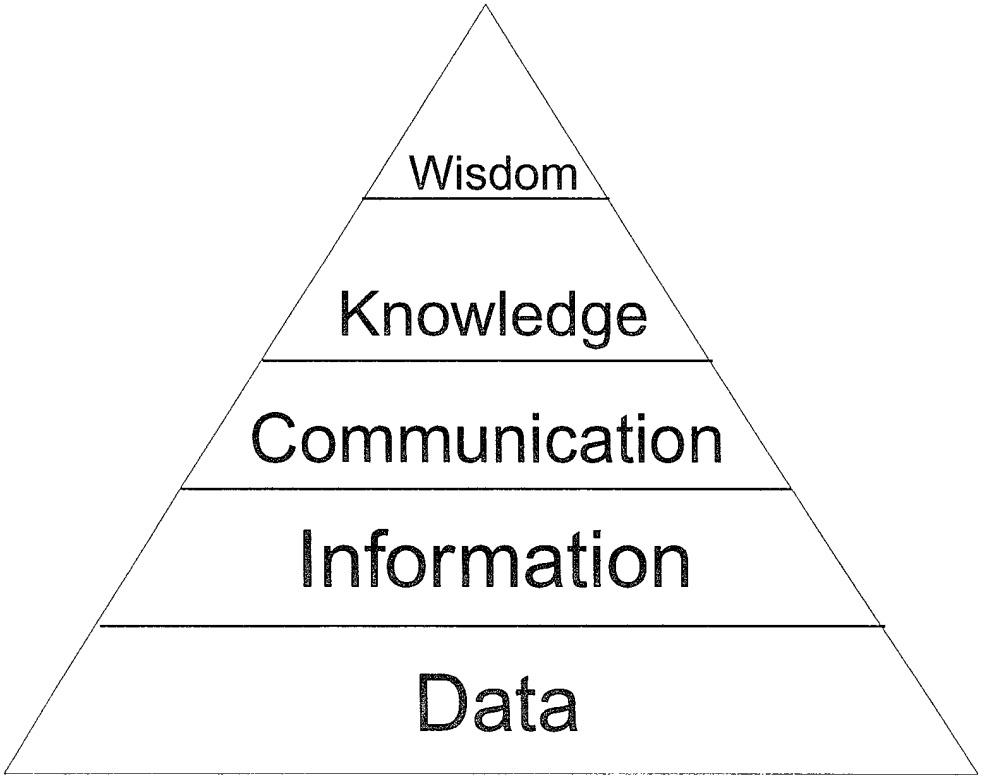

Figure 1: Hierarchy Diagram

within."[22] In other words, materialists assimilate information to reinforce their materialistic paradigms. Mr. Connolly attempts to demonstrate the depth of difficulty in overcoming this tendency by explaining that "the problem of ideology is confronted at bedrock level when we recognize that it is a problem..."[23]

Newton's physics gave us our model of certainty, the cornerstone of materialism. This model has been exploited to the maximum extent possible by the industrial nations. The new physics has literally blown apart this concept of the universe.[24] Planck's physics has given us the model for intellectual advancement. As we move further into the second Renaissance, intellectualism will surely replace materialism. Dr. Kissinger makes note of a similar phenomenon occurring in political structures in his book, The Troubled Partnership. His insights are fitting of a second Renaissance.

> In the life of societies and international systems there comes a time when the question arises whether all the possibilities of innovation inherent in a given structure have been exhausted. At this point, symptoms are taken for cause; immediate problems absorb the attention that should be devoted to determining their significance. Events are not shaped by a concept of the future; the present becomes all-intrusive. However, impressive such a structure may still appear to outsiders, it has passed its zenith. It will grow ever more rigid and, in time, irrelevant.[25]

Although all the possibilities of innovation in materialism have not been exhausted, we are certainly approaching the limit. Bear in mind, the "chip" is from quantum physics, not Newton physics.

One of the defining characteristics of Chaos is period doubling. It is technically referred to as a bifurcation. As a system acquires more energy it reaches a point where it will begin to oscillate between its current state and the yet undefined state. As the energy continues to mount, at some unpredictable instant, the old system will split into two new systems, rendering the old one irrelevant, except for historians, of course. Each of the new systems possesses characteristics of their parent, but take on many new and unique characteristics. As long as the energy does not decrease, the new systems embark on their life cycles.[26] It appears as though the system of consciousness underwent such a bifurcation during the first Renaissance and it may have experienced another recently, what I am calling the second Renaissance.

In the previous section I suggested that data are the source of energy for activating consciousness. Prior to the first Renaissance, there was no dominant -ism, no focus on any particular data. The ability to gather data depended upon a person's mobility. Lacking the means, data were gathered slowly and predominantly by the wealthy, the materialists. This level of communication,

although minimal in terms of our abilities today, appears to have been sufficient to raise the levels of energy in consciousness for a bifurcation to occur. The system of consciousness seems to have split into materialism and non-materialism during the first Renaissance.

During the industrial age machines were invented that allowed greater mobility and greater ease of communication over long distances. Data gathering became easier. Energy levels of consciousness were raised higher. It seems to me another bifurcation has occurred, probably in the 60's. Where there was once only one path for consciousness to evolve, prior to the first Renaissance, now there are four, post second Renaissance. See figure 2. This is probably why there seems to be so much disorder in the world today.

Strategists come to the course with their materialistic philosophies, potentially unaware and guarded against critical perceptions of the world's current situation as just described. The visioning process, step one in developing a strategy, requires an objective assessment of the current situation. If strategists are unaware of the knowledge of the concepts presented thus far in this paper, they will be poorly equipped to cope with information age strategy. The solution, of course, is to provide the student with such information.

Bifurcation Diagram: Evolution of Consciousness

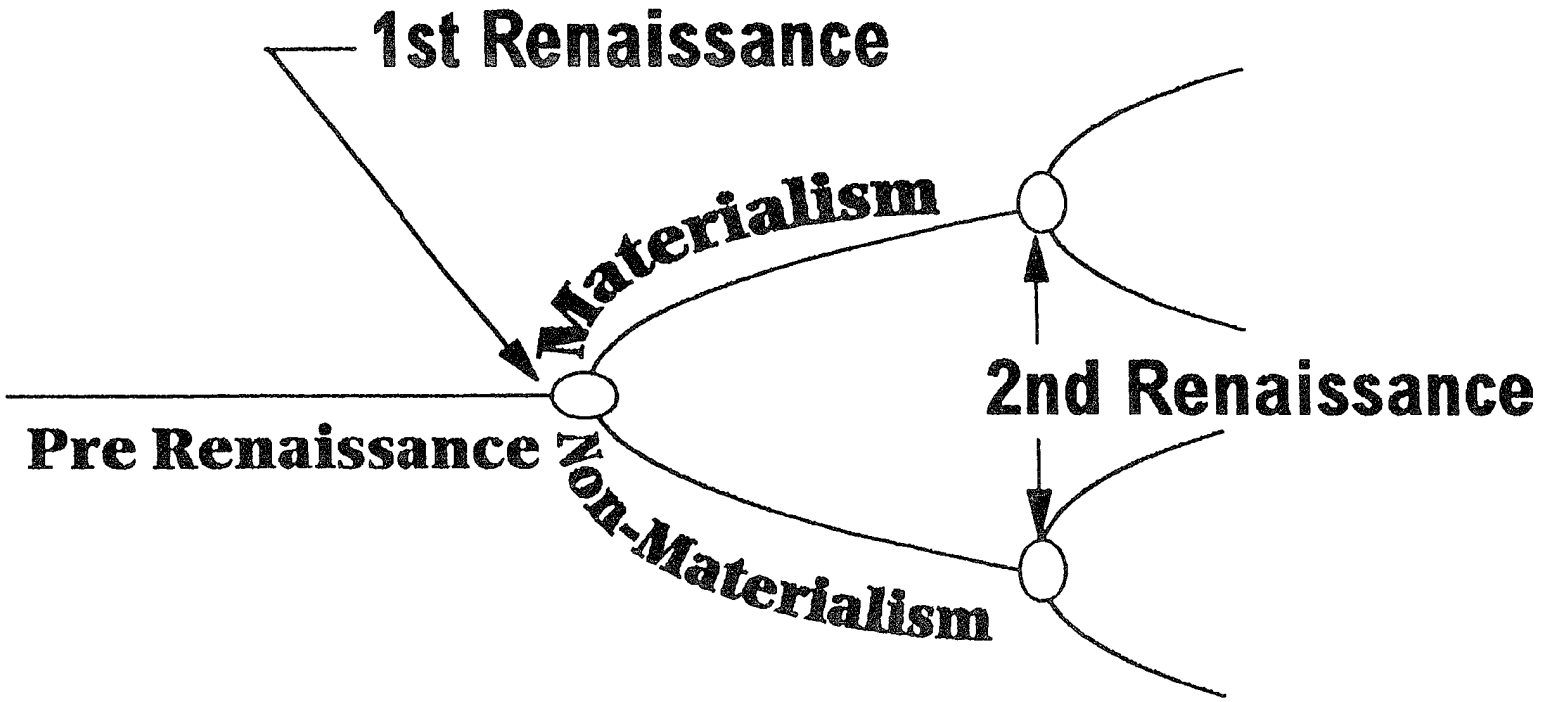

Figure 2: Bifurcation Diagram

PROBLEM SOLVING TECHNIQUES

The new student of western strategy arrives at the college with a fully developed "tool box" of techniques for problem solving. The experiences which each student has encountered enroute to the course have required the development of exceptional analytical skills. The value of these skills has been proven and reinforced over and over again.

The dilemma that the students encounter in this new environment is that they must now face the fact that the techniques that were so successful do not work very well. Thinking about strategy requires right brain, intuitive thinking. Until faced with the strategic environment, left brain thinking dominated the students' problem solving techniques. Materialism is a left brain culture. Intellectualism is a whole brain culture.

The intuitive, holistic thinking that Charles Taylor speaks of resides in a generally unexercised portion of our brains. Students have all encountered its use prior to arriving at the course. However, most of those experiences were considered serendipitous, not consciously requested. Every student is quick to admit that these experiences always concluded better than expected, but there was always a degree of uncertainty in the decision. Learning to

engage this type of thinking at will would provide the future strategists with additional intellectual capacity to do their jobs.

Courses on Creative and Critical Thinking are available at the college. Since these courses are electives, not all students encounter them. I participated in both courses and found myself routinely in level three thinking. Consideration should be given to making these courses mandatory, so that each student is exposed to the concepts.

PARADOXES OF DEMOCRACY

The environment in which strategists work will influence their thinking. In the United States, strategists will be influenced by the unique democratic ideology that underlies the governing principles of the state.

Democracy is the form of government that not only allows freedom of choice, it flourishes because of it. The dilemma that this poses for the strategist is that gaining agreement on any part of a strategy can be a herculean task. The immensity of the task is directly related to circumstances surrounding the strategists. Dr. David Jablonsky's "Why is Strategy Difficult?" portrays the situation lucidly.

When at war or when planning for war, a vision that leads to victory is difficult to derive, but not nearly as difficult as articulating one now, when the world is predominantly at peace. Everybody and his brother has an opinion about how the multiplicity of possibilities will unfold into the future. And nobody is certain enough to seriously espouse his opinion publicly.

For any organization to survive, it must have direction. Strategic visions are intended to articulate that direction. Articulating such a vision in a democracy is particularly difficult because everyone has a different opinion.

A paradox of democracy is that as badly as a direction is needed, deriving one requires the participants to practice counter democratic principles,i.e., give up their opinion and support someone else's. By leaving the development of strategy to politicos, it is possible that until war is imminent, we are likely to do without a vision.

From within the science of classical physics, democracies are terribly frustrating and inefficient. From within the science of Chaos, on the other hand, democracy seems natural. It provides for orderly unpredictable change with limited control.

The paradox continues in that we expect our leaders to have visions and explain them to us. Yet, being a visionary is not a requirement for becoming

a candidate for public office. In fact, being a visionary might prove fatal to the quest for public office.

Another paradox which works in our favor is that democracies are bureaucracy dependent and they move slowly. In today's world of special interest groups and the multitude of possible directions we could take, going slow has its advantages in preventing knee jerk reactions and false starts.

None of these paradoxes make thinking about strategy easier. The current curriculum provides the student with sufficient information about these paradoxes. However, finding these paradoxes and concluding that they are part of why thinking about strategy is difficult is left to the student. To generate level three thinking the curriculum should guide the student into these considerations.

PHILOSOPHY OF PEACE

Much has been written about peace. Erasmus, alone, published twenty eight editions on it in the 17th century and eight more in the 18th. There are 866 titles in the USAWC library, to include several books by former Presidents of the US. Erasmus' idealistic vision of a new world order in 1516 saw peace as the rejection of war and the leaders acting on Christian principles,i.e.,

pacifism.[27] I think peace is more than pacifism. War is an element of the power of the State, whereas peace is an individual state of mind. I think peace endures side by side with war and I think we need to study material that provides the opportunity for new insights.

Without an understanding of peace and the ability to remain calm in the face of overwhelming odds, the strategist risks the danger of being absorbed by immediate problems. With an understanding of peace and the experience of tranquility the strategist is better equipped to deal with the stresses and difficulties of thinking about strategy.

Peace can serve the strategist as a shield served the Roman soldier. The shield was used to ward off the blows of an opponent to provide the soldier adequate time to outmaneuver his foe. Peace in the mind of the strategist provides him or her a similar advantage, a shield against the din of the moment. When we are taking our time to ponder, new ideas arise. A new idea in the strategist's world is equivalent to a maneuver in the soldier's world. The new idea might allow the strategist to sidestep some issues while consolidating others. This is maneuvering in the mind. It occurs best in a peaceful mind.

When the mind is being "attacked" with data, it has two choices. It can decide on an alternative immediately and go into action or it can ponder the

situation. A materialist's tendency is to act immediately. Without a shield, pondering is not a choice. This shield is very important for the strategist.

To adequately equip our strategists for their vision quests, providing them an opportunity to experience some spiritualistic right brain techniques seems valuable. Practicing techniques that cause us to use the right side of the brain as well as the left can only enhance our ability to think. Having internalized peace through some of these practices, strategists would have knowledge of how to employ their shields in future encounters with overwhelming data.

Overcoming the barriers of the materialist so that study of this type would be possible could prove formidable to the faculty. A number of books are now available that shroud spiritualism with intellectualism making the reading less threatening.[28] Many of the books on Chaos and Quantum Physics wander from intellectualism into spiritualism. Perhaps using such texts would implant the information subtly enough to make the course acceptable.

Furthermore, a construct for the concept of global peace is needed. Without the construct, the ends, nobody can design the ways or the means to achieve it. A strategy for peace cannot exist until someone proclaims a practical vision of a world at peace. With a such a concept in the strategist's mind, choices regarding the ways and means to achieve such an "end state" will

be more discernible. The curriculum on strategy should include a guided opportunity to study a philosophy of peace.

TEAM APPROACH

As we engage with our environment during the emerging information age, we will continue to encounter and amass enormous volumes of data. We will become so involved with daily activities that less and less time will remain for silence, for thinking, turning data into useful information. As this time diminishes, our interdependence on each other will become more apparent and more important.

What we expect from the strategist is to provide a vision that sees fulfillment of basic human needs for all and the maintenance of peace on earth. Knowing that such a situation is not likely in one lifetime, if ever, and being aware of the disparities among people and nations, we task the strategist with approximating such conditions and planning the ways and means to accomplish them. It should be clear that expecting one person, a strategist, to accomplish such an enormous task has become unreasonable.

Strategic visions should be derived by multi-disciplined teams composed of pioneers who are routinely pressing the edges of current paradigms into the future. Holistic perspectives and team approaches are complementary. They go together naturally. Representatives of the three fundamental psychological ideologies--materialism, intellectualism, and spiritualism-- should be brought together for developing meaningful strategic visions in the information age. These match the body, mind, and spirit trinity of holism. If we change the purpose of strategy from one of security to one of a quest for peace, as the motto of USAWC implies, fewer military players will be required. However, since national security will remain prevalent for the foreseeable future, the military should continue to play a dominant role.

The task of organizing strategic teams into seminars could prove as daunting as organizing a joint warfighting team. New algorithms for selecting and integrating participants are likely to be needed. Perhaps the strategic personality simulation model[29] could be used to differentiate which student should be assigned to which seminar.

A CURRICULUM OUTLINE

The present curriculum for learning how to think about strategy focuses on historical events and the four elements of power. If, as I have argued in this paper, thinking about strategy is the challenge, then learning how to think about this new type of thinking should be the primary focus of any course that intends to qualify strategists. Historical and political events become the nucleus around which all this new type of thinking can then coalesce.

Appendix A - Outline of Curriculum, contains a synopsis of the descriptive material which follows. The present three term structure is appropriate for the new curriculum. However, the first two terms will be devoted to electives and the last term will be structured around the seminar. I envision the last term in this new curriculum to closely approximate the first term in the current curriculum.

During Term I courses would be offered on the following material: Physics, Problem Solving and Paradoxes of Democracy. During Term II courses would be offered on the philosophies of Intellectualism, Materialism, and Spiritualism. During Term III the courses and presentation would parallel the current Term I curriculum.

During Term I four electives would be required, ten class periods scheduled for each elective. Each student would be required to select electives so that at least one course was taken from each field, i.e., one from Physics, one from Problem Solving, and one from Paradoxes of Democracy. Each course should be designed with a minimum of four subcourses. A total of twelve classes would be available. Dividing a student body of 300 equally would size each course at 25 students.

During Term II four electives would again be required. One of these would be the Regional Strategic Appraisal. The other three would be selected from courses focused on Intellectualism, Materialism, and Spiritualism. Again, as in Term I, each student would be required to select one course from each area.

During Term III the seminar would assemble in their classrooms and undergo the intense historical and political course presently taught in Term I. Minimal modifications to the current curriculum would be required.

The guest speaker program at the USAWC should be maintained in tact. It is likely that the student body would be able to develop different insights from the speakers if they are learning how to think differently in class. Some of the question and answer sessions might be very interesting.

COURSE MATERIAL AND REQUIREMENTS

TERM I - Level 1

During Term I Physics could include a subcourse on "Quantum Physics in the Information Age", "Chaos in the Information Age", "Complexity in the Information Age", and "Reality in Cyberspace". Textbooks for these courses could include, Quantum Reality: The elemental mind, Nick Herbert; Chaos:Making a new science, James Gleick; Complexity, Roger Lewin; The Matter Myth, Paul Davies and John Gribbin respectively. A requirement for this subcourse would include a twenty minute oral presentation on the student's understanding of the material, given during the last two periods of the course. A written requirement could easily be designed that would require research in other texts.

The Problem Solving course could be presented simply be expanding Dr. Herb Barber's programs on Creative Thinking and Critical Thinking. The current courses are fun and challenging. By providing these courses early in the curriculum, the various psychological evaluations that are currently undergone during orientation week could be integrated into the student's

process of change. In other words, these self-evaluations of the personality could be made useful.

For the course on the Paradoxes of Democracy, I would recommend Henry Kissinger's book, American Foreign Policy, as the primary text. He describes our system of government in ways that only a learned intellectual could. He provokes thought, the essential ingredient to learning. Oral and written requirements could easily be designed around this sizable subject.

Remember in designing these courses that the objective is to cause the student to stretch his mind without fear of failure. Each course must allow the student to wander outside his or her comfort zone. Some students will wander further than others so dialogue in these courses will be very important.

TERM II - Level 2

During Term II the courses on Intellectualism would focus on data, information, communication, and knowledge. The Psychology of Communication, by Jon Eisenson, J. Jeffery Auer, and John V. Irvin could be one of the texts for this course. Another is Developing Managerial Information Systems, by Andrew M. McCosh, Mawdudur Rahman, and Michael J. Earl. The intent of this course would be to critically analyze human interaction with the processes which form the basis of cyberspace.

Each student would be required to engage the Internet. Specific assignments could direct the student's attention to a particular address and require his or her daily interaction. Course requirement would be to brief fellow students on what was learned during the interaction with the Internet assignment. By structuring the requirement for oral and written presentations properly, the student would be required to keep a daily journal.

Portraying the affects of materialism on our thought processes would be the intent of the course, Materialism. Such books as Nature and Human Nature, by Lawrence K. Frank could serve as a basic text for the course. Or, subcourses might be designed to stimulate the student's intellect. Subcourses might include such topics as "The Birth of Materialism - The Renaissance", "Newton's Physics and Materialism", "Understanding Fear", and "Understanding the Material Reality." Numerous books are available in the USAWC and Military History libraries to support these subcourses.

The written requirement for the course on materialism might be to have the student prepare a paper on how he or she has been influenced by this cultural bias. The oral requirement could be assistance with conducting a particular portion of the class.

Spiritualism will be the most challenging course in the curriculum. Working publicly in this realm generally causes a feeling of discomfort. There

will be a tendency for the students to slip into religion in this course, but that is not the intent. In fact, the faculty will be required to prevent such a situation.

I envision a variety of text material being used as the basis for this course. The Eagle's Quest, by Fred Alan Wolf is excellent. The 13 Original Clan Mothers, by Jamie Sams offers the feminist perspective of Native American spirituality. The Holographic Universe, by Michael Talbot or Stalking the Wild Pendulum, by Itzhak Bentov could be used to wander out of physics and into spiritualism. Subcourses for such a course might include such topics as "Native American Spiritualism", "What is Spiritualism", "Mind Expansion through Spiritualism", "Visions in Spiritualism", and "A Philosophy of Peace". The books mentioned above could easily be used as the basis for these subcourses. Many others are available for research.

Student requirements might include a written book report on a researched text and an oral presentation on subject material for a specific topic in the class.

TERM III - Level 3

During Term III the seminars would assemble in their classrooms as they do now in Term I. The intent of this term would be to immerse the student in significant facts about historical leaders and the four elements of power, much the same as is done in Term I now.

I believe that students will approach this part of their education with a broader perspective if allowed to participate in a curriculum of mind broadening courses prior to this phase of the process. I also believe that students who have been instilled with information from outside their comfort zones will be more likely to look for how the history they are studying can be of use to them in the future. In other words, it is possible that students of this curriculum will begin to envision strategies and strategic visions right in the classroom.

The final requirement for Term III would be for the student body to participate in a Strategic Crisis Exercise of five day duration and for each seminar to prepare a written strategic vision. A panel of faculty would then be briefed on each of these visions. Briefings could take no longer than one hour, so twenty seminars could brief in two and one half days. The panel

would select the top four visions. Selection criteria would, of course, be published early.

The top four briefings and visions would then be presented during the next to last week of Term III. These visions and the regional strategic appraisals would be briefed to the student body and to any guests thought pertinent in Bliss Hall.

FACULTY AND STAFF

It might seem like an entire new faculty will be required, but I assure such is not the case. To teach Term III, I would think that the same faculty could be used that currently presents Term I.

To provide instruction in Term I, Physics, any of the current faculty who have had training in the sciences would be able to present the material. There are no mathematics or proofs, just metaphors and analogies in a scientific arena. Members of the knowledge engineering group could easily aid in the development of the course materials and in the training of the faculty. Dr. Herb Barber can handle the Problem Solving courses. Political science professors, currently employed at the USAWC, could design the courses on the Paradoxes of Democracy.

Term II presents the greatest challenges. The courses on intellectualism could be designed and taught by members of the faculty like the former Charles W. Taylor. Again, these courses are not intended to present highly technical material. So, once the courses are designed, most INTJ's could facilitate them.

The course on materialism might require a psychologist to assist in its development. Using a psychologist to present the material might also prove beneficial. So, here's a change, add four psychologists to the faculty.

The course on spiritualism will be the most difficult course to resource. A quantum physicist or a student of Native American spiritualism will be required to develop the course, maybe both. Once the course is designed it will not be easy for any of the current faculty to teach. So, here is another change to the faculty, four instructors will be required for this course.

An interesting aside arises from this suggestion. The USAWC could hire Native Americans to work at the "Indian School" to help teach US Army Officers how to think differently.

The staff will require a change also. Because this curriculum encourages the student to delve into his or her psyche, the need for staff psychologists is probable. Also, it is likely that the student body will be much more involved with computers and the network. More support will be required for this

system. I recommend that the system be supported twenty four hours a day, seven days a week.

If the computer support staff is changed to meet these recommendations, then I would make the USAWC net available on the World Wide Web. The information being generated by students and faculty would become instantly available to everyone in the world. If the USAWC adopts this curriculum it will potentially find itself on the leading edge of international strategic visioning. The USAWC would be operating routinely in cyberspace, truly an information age giant.

HOW TO PROCEED

The danger of presenting an approach that might be perceived as reaching too far into the future is that the idea will be cast off out of hand. I realize that I am presenting an approach that might fit into this category, so I have designed an experimental organization that might be less threatening than attempting to change the entire curriculum at once.

Identify who will be the course designers. Assign them to design only one course each for the six areas presented in this paper. Allow one year for the design so that each of the courses can be integrated into the other. By

March, 1996 require one course on Physics, one on Intellectualism, Problem Solving, Paradoxes of Democracy, Materialism, and Spiritualism be ready for the class of '97.

Notify all members of the class of '97 of the experimental program that will be run and ask for volunteers. Select twenty for the experiment. Attempt to keep the mix that is currently used in the selection process, i.e., branches, civilians,and reservists.

Develop a schedule for this experimental seminar that would allow them to assemble for guest speakers, just like the rest of the class. They would participate in softball as a seminar, etc. The schedule for this seminar would follow the outline presented in this paper.

Prepare a final critique of essay questions for the entire student body. Ask, "What is strategic vision and do you think you will ever use it?" Ask, "Have you learned anything, and if so, what, in this program that will help you personally?" Ask, "Do you think your colleagues got as much out of this course as you did? Explain." In other words, ask for essays on the value of the curriculum. Allow two days for responses and require responses be transmitted from home to the proper address at the USAWC, via the Internet.

If the experiment seems to produce a higher quality strategist, put the plans in place for the conversion. If not, drop the experiment or modify as

needed. If conversion is the verdict, then continue the experiment with one seminar each year until the conversion. Converting the entire school at one time is probably the most efficient way to get to there from here. However, adequate time must be allowed in the interim years for course development and staff and faculty changes.

As military budgets are reduced the USAWC stands to risk being downsized or closed. The leadership must be aggressive at not allowing this to happen. If the experiment is successful, a program of instruction as described above is likely to attract noted scientists, modern philosophers, futurists, spiritualists and etc. Tuition is a possibility.

SUMMARY

The information age is much more than digitization. It will bring with it a new culture, one based on a different ideology than the familiar materialism. For strategists to be adequately equipped for this huge paradigm shift, they will require new knowledge and be able to apply it in both worlds simultaneously. Since the entire world is not going through these paradigm shifts, this duality of thought will be required for the foreseeable future.

With scientific proof now in hand that the future will remain unpredictable, we must accept the responsibility associated with terminating the quest for certainty. New techniques are required for developing strategy in the information age. Highly skilled practitioners of strategy are essential.

When we recruit a fresh young American into the military, we do not expect that person to immediately go to combat. We give that recruit tools and teach him or her how to use them. After individual training is satisfactorily completed, we train them to perform as part of a team. Preparing strategists for their new missions is no less important than training new recruits.

The curriculum that I have proposed in this paper would guide the students through the three levels of thinking and hopefully expand their mental capacities for working with indeterminism. I think implementing such a program is likely to produce as high a quality strategist as we observe in the tactical quality of our soldiers.

If my surmise of the current situation is correct and we are in the midst of a second Renaissance, it is a matter of urgency for the entire human race that individuals among us are able to ponder coming events and are able to assist with shaping our behavior to cope. This responsibility is immense. It

needs to be shared by all who are pioneers, stretching today's envelope of reality into the future. Think about it.

APPENDIX A - Outline of Terms

TERM I - Level 1

Course 1 - Physics

Subcourse A - Quantum Physics in the Information Age Text - Quantum Reality: The elemental mind, Nick Herbert

Subcourse B - Chaos in the Information Age
Text - Chaos: Making a new science, James Gleick

Subcourse C - Complexity in the Information Age
Text - Complexity, Roger Lewin

Subcourse D - Reality in cyberspace
Text - The Matter Myth, Paul Davies and John Gribbin

Course 2 - Problem Solving

Subcourse A - Creative Thinking
Text -

Subcourse B - Critical Thinking
Text -

Subcourse C - Meyers-Briggs and KAI
Text -

Subcourse D - The Psychology of thinking
Text -

Course 3 - The Paradoxes of Democracy

Subcourse A - The business of bureaucrats
Text - American Foreign Policy, Henry Kissinger

Subcourse B - Moral Government
Text -

Subcourse C - Justice and Injustice
Text -

Subcourse D - Prophets and Statespersons
Text - American Foreign Policy, Henry Kissinger

TERM II - Level 2

Course 1 - Intellectualism

Subcourse A - Systems in the Information Age
Text - Developing Managerial Information Systems, McCosh, Rahman and Earl

Subcourse B - What is information
Text -

Subcourse C - Data, Information, Communication
Text -

Subcourse D - Epistemology and computers
Text -

Course 2 - Materialism

Subcourse A - The Birth of materialism - the Renaissance
Text -

Subcourse B - Newton's Physics and materialism
Text - The Matter Myth, Davies and Gribbon

Subcourse C - Understanding Fear
Text -

Subcourse D - Understanding the material reality
Text - Relativity, Albert Einstein

Course 3 - Spiritualism

Subcourse A - Native American Spiritualism
Text -

Subcourse B - What is Spiritualism
Text -

Subcourse C - Mind expansion through spiritualism
Text - Stalking the Wild Pendulum, Itzhak Bentov

Subcourse D - Visions in spiritualism
Text - The Holographic Universe, Michael Talbot

Term III - Level 3

Course 1 - Same as in current curriculum TERM I

Course 2 - Same as in current curriculum TERM I

Course 3 - Similar to current curriculum TERM I, modified to allow for preparation and presentation of the strategic crisis exercise and a strategic vision.

ENDNOTES

1. Levels of thinking are defined in the Critical Thinking course offered as an elective at the USAWC. MG Chilcoat has also described levels in his vision of USAWC IV. Dr. Herb Barber is the primary instructor of the Creative and Critical Thinking courses.

2. R. Buckminster Fuller, Critical Path, Adjuvant Kiyoshi Kuromiya (New York:St. Martin's Press,1981), xxx.

3. Charles W. Taylor, "Creating Strategic Visions", (Carlisle, PA:Strategic Studies Institute, 1990), 1.

4. Colonel Emil K. Kluever, LTC William L.Lynch, Col Michael T. Matthies, LTC Thomas S. Owens, and Col John A. Spears, "Striking a Balance in Leader Development: A Case for Conceptual Competence", National Security Program Discussion Paper Series, (1992), 125.

5. Department of the Army, Strategic Leadership, Army FM 22-103 (Draft) (Washington, D.C.:Department of the Army, 1994), 1-9.

6. This is author's conclusion. If information can be kept from the masses, their futures will unfold slowly. On the other hand, if free flow of information is permitted, the future unfolds much more quickly. I was fortunate enough to personally observe the conditions in the former East Germany from an altitude of 100' only three years after the collapse of the wall. The country had the appearance of our country in the late 40's and early 50's. Materialistic progress had been virtually stopped after WWII. I attribute this remission to suppressed information.

7. Margaret Wheatley, Leadership and the New Science (San Francisco, CA:Berrett-Koehler Publishers, Inc., 1992), 134.

8. Ralph D. Stacey, The Chaos Frontier; Creative strategic control of business (Jordan Hill,Oxford:Butterworth-Heinemann Limited,1991), 21.

9. James Gleick, Chaos:Making a New Science (New York:Penguin Books,1988), 23.

10. Hans Lauwerier, Fractals:Endlessly Repeated Geometrical Figures (Princeton, NJ:Princeton University Press,1991),xii. The example given in this text is that of a tree. The trunk separates into branches which separate into twigs.

11. Per Bak and Kan Chen, "Self-Organized Criticality", Scientific American, Vol 264,No.1 (1991):46. This article provides some fascinating insights as to how population control occurs naturally.

12. John L. Casti, Reality Rules: I:Picturing the World in Mathematics - The Fundamentals - (New York:John Wiley & Son, Inc., 1992), 250.

13. Roger Lewin,Complexity: Life at the Edge of Chaos (New York:Macmillan Publishing Company, 1992), 192.

14. Sidney Perkowitz, "Strange Devices",The Sciences, Vol. 35, No.1 (New York Academy of Sciences:New York, Jan-Feb 95), 21-27.

15. General Gordon R. Sullivan and Colonel James M. Dubik,"War in the Information Age" (Carlisle, PA:Strategic Studies Institute, 1994),p.1. This quote is noted in this monograph with reference to 13 publications as evidence to support it.

16. Paul Davies and John Gribbin,The Matter Myth (New York:Simon & Schuster, 1992), 14.

17. Wheatley, 107.

18. Lewin, 156-157.

19. Jon Eisenson, J.Jeffery Auer, John V. Irwin,The Psychology of Communication (New York:Meredith Publishing Company, 1963), 178.

20. Ibid., 149.

21. Webster's Dictionary, 1987 ed., s.v. "materialism."

22. William E. Connolly, Political Science & Ideology (New York: Atherton Press, 1967), 3.

23. Ibid., 4.

24. Davies and Gribbin, 14.

25. Henry Kissinger, The Troubled Partnership: A Reappraisal of the Atlantic Alliance (New York:McGraw Hill,1965), 249.

26. Gleick, 71-78.

27. James Turner Johnson,The Quest for Peace: Three Moral Traditions in Western Cultural History (Princeton, NJ:Princeton University Press, 1987), 158-162.

28. I have annotated the titles of spiritual books that are shrouded in intellectualism in the bibliography with a double asterisk.

29. Norman D. Livergood,"Strategic Personality Simulation:A New Strategic Concept",(Carlisle, PA:Center for Strategic Leadership, 1995).

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